Another success from the garden shed

BAREND VAN HERPE

Ecocar 2000

Could the all-weather, all-purpose recumbent become the utility vehicle of the future? Dutchman **Wim van Wijnen** tells the story of his own machine

I made my first recumbent in 1963, while I was waiting to go to medical college. Recumbents were virtually unknown then, and I was followed several times by police, who clearly viewed my unusual vehicle with some suspicion, as they finally arrested me and fined me 10 guilders. They also confiscated my bike, mumbling something about certain parts of the machine not being fixed on tightly enough.

I didn't make another recumbent till 1983, while I was working as an opthalmic surgeon in a rural area of Holland. After that, there was no stopping me from designing and making all kinds of new bikes. All my bikes have been two-wheeled recumbents with front wheel drive.

Why recumbents? As an eye specialist I recognised that the half-sitting position is very restful to the eyes, in contrast to the headaches which racing bikes can cause when riders need to turn their eyeballs as far up as they will go.

Why two wheels? I believe that bicycles operate better in traffic than three or four wheelers. Genuine cycles are faster and more comfortable than 'substitute cars'.

Why front wheel drive? Because it seems to be the most logical way to construct a two wheeled recumbent. Advantages: simplicity of design, short chain, two standard wheels. Disadvantage: you have to learn a new way of riding a bike, but it's essentially no more difficult than riding bikes with other ▷

transmission arrangements.

Thus evolved in 1986 my 'Cha-Cha Bike' (Charming Chair Bicycle). The ideas behind this model were taken up by a good number of bike builders in the Netherlands, and I myself have travelled around 25,000km on it. I live 25km from the hospital where I work, and ride there and back each day.

I began to think further about what an ideal commuter bike should provide the rider.

– It should have good weather protection that is integral to the bike (but an all-enclosing shell is too hot and noisy)

– It should be as maintenance-free and rust-free as possible.

– It should have as many functions as possible built into the frame (cables, chain, instrumentation, luggage room).

– It should be a simpler design than the 'Cha-Cha Bike'

These thoughts came together in the form of the Ecocar 2000. I made the latest version in 1989/90 and, as you see in the photos, it's mostly made from rivetted sheet aluminium (1.0 and 0.6mm). The arched construction over the rider achieves two things at once. It's a fixing point for a drop-down rain cover, and gives a very simple and stiff frame. The machine articulates, thanks to a two part 'headset'. One is below the rider, and the other is in the arch above his head. They are set at an angle of 40 degrees.

The box-shaped frame construction allows easy access to all hidden parts. The arched roof has the handlebar attached to it; it houses the cables and switches for the lights, it carries the brake and gear cables (the Ecocar is fitted with a Sturmey-Archer five speed); the horn, speedometer and radio are also installed there. To avoid the forward blind spot there is a little window set into the front of the arch. If it rains the canvas sides can be let down.

The chain is in the front wheel arch, the lockable luggage boot is at the back. The rear section, including the seat, articulates and has pneumatic suspension, further helped by two (top quality) tennis balls under the seat.

The lighting system consists of two halogen front lamps; a dim one and a 'full beam', to use when oncoming motorists fail to dip their lights. The battery is rechargeable and gives me around four hours of light and radio.

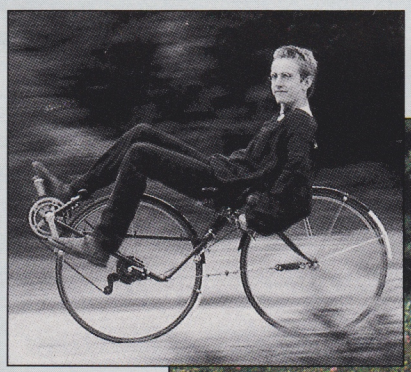
The whole frame is self-supporting, with only a few strengthening pieces here and there. The weight, with all equipment on board, is around 25 kilos.

After riding the Ecocar for 2000km or so I feel very positive about it. It's pretty fast, mainly thanks to the streamlining of the rear. It's also very comfortable, and when it rains I ride along in triumph while my fellow cyclists get soaked!

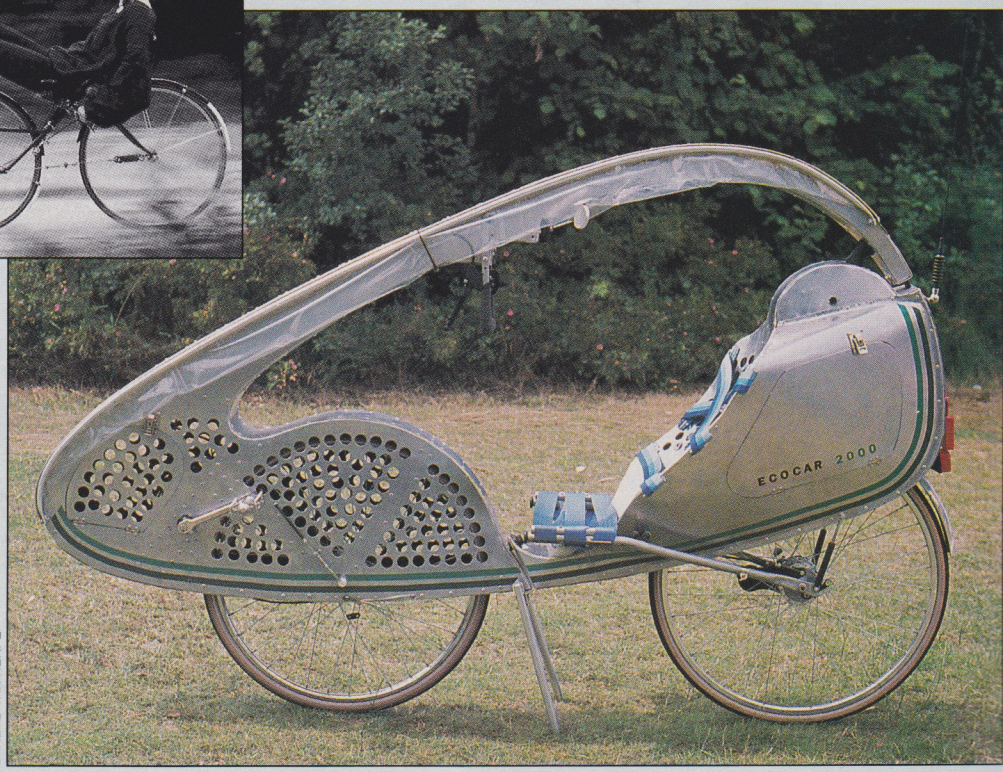
To be honest, some things are not quite right. Despite being drilled with holes, the front part of the frame is too sensitive to the wind. I shall need to decrease the surface area on the sides. Also, when the canvas sides are down, the rider's vision is restricted. The window in the roof arch needs to be bigger, and equipped with a windscreen wiper. Another problem is that the centre of gravity is too low, making balance rather difficult for the inexperienced recumbent rider. The rider needs to sit 10cm higher and the hinge angle must be no smaller than 45 degrees (and no bigger, otherwise the front part of the vehicle would swing about when you pedal).

The next model will take all this into account. But what else does the future hold? Given that the frame is a very simple shape, would glass fibre technology allow the possibility of a simple, cheap production model?

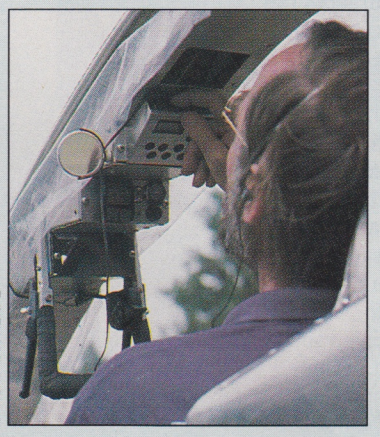
As a citizen of Holland, 'Land of the Bicycle', I say this to my fellow inventors in the UK: Do your best to make ecological vehicles which will attract the lazy car driver. I'd very much like to know what you come up with! **NC**



The inventor with his 1963 recumbent, which aroused the suspicions of the local police. Note the front wheel drive, also used in the Ecocar



The Ecocar's arched aluminium construction with rainflaps in their fairweather position



Inside the cockpit all the controls are within easy reach

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